CLAIMS:

1. A method for the production of battery electrodes comprising the following:

production of compositions for the cathode or anode material

extrusion of the respective material to form the anode or cathode or the separator,

characterized in that

the compositions for the cathode or anode material comprise isocyanate and an aqueous dispersion of a polymer binder, and

the process control in the extruder is chosen in such a way that the isocyanate and the aqueous dispersion of the polymer binder react with one another through a chemical reaction of the isocyanate groups with the polymer binder to form porous structures.

2. The method according to claim 1, characterized in that the isocyanates comprise di-, tri-, and/or polyisocyanates.

3. The method according to claim 1 or claim 2, characterized in that the isocyanates are selected from the group consisting of isophorone diisocyanate, 1,4-cyclohexane diisocyanate, 1,3-bis(3-isocyanato-4-methylphenyl)-2,4-dioxo-1,3-diazetidine), NCO-prepolymer of poly(butene adipate) and toluene diisocyanate (65 % 2,4 and 35 % 2,6-disubstituted), and naphthalene 1,5-diisocyanate.

4. The method according to any of the claims 1 – 3, characterized in that the polymer binder is selected from the group consisting of polyolefins, polyethylene, polypropylene, polyisobutene, polystyrene, rubbers on the basis of styrene/butadiene or isoprene, and fluoroelastomers, preferably their co- and/or terpolymers, further preferred terpolymers on the basis of tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride.

5. The method according to claim 4, characterized in that aqueous dispersions with nonionic emulsifiers or salts of perfluorocarboxylic acid with a number of carbon atoms of preferably more than 6 or polymers on the basis of fluoropolymers, in particular co- or terpolymers, are used as polymer binder dispersions.

6. The method according to any of the previous claims, characterized in that an electrode material with open-porous structure is obtained.

7. The method according to any of the previous claims, characterized in that the extrusion of the electrode materials occurs at temperatures of 80 to 180 °C, preferably at 120 to 140 °C.

8. The method according to any of the previous claims, characterized in that the extruded materials are laminated to current collector films.

9. The method according to any of the previous claims, characterized in that the isocyanates are utilized in quantities of 0.5 to 10 percent by weight based on the respective electrode material.

10. The method according to any of the previous claims, characterized in that the aqueous polymer dispersion is 1 to 15 percent by weight based on the respective electrode material.

11. The method according to any of the previous claims, characterized in that the anode material exhibits carbon that may be intercalated, preferably graphite or mesocarbon microbeads.

12. The method according to any of the previous claims, characterized in that the cathode material is comprised of metal oxides that may be intercalated, preferably of Mn, Ni, Co, Ti, Cr, Mo, W.

13. The method according to any of the previous claims, characterized in that the electrode materials comprise additives such as fillers, including SiO_2, acid catchers, inhibitors, including MgO, Al_2O_3, or amines or activators in organotin compounds or Lewis bases, including 1,4-diazabicyclo[2.2.2]octane.

14. The method according to claim 13, characterized in that the additives are comprised in the electrode materials in quantities of 0.01 to 1 percent by weight.

15. The method according to claim 8, characterized in that the laminating occurs with pressures of 2 – 10 bar.

16. The method according to any of the previous claims, characterized in that the dosing of the aqueous polymer dispersion occurs in an extruder with a pump into the feed zone of the extruder at temperatures of 20 – 100 °C.

17. The method according to any of the previous claims, characterized in that the respective electrode materials are extruded by means of a slit die of the extruder with widths of 30 to 500 mm and thicknesses of 5 to 1,000 μm.

18. The method according to any of the previous claims, characterized in that the anode, cathode, and separator materials are produced as films with porous structures through dosing of aqueous polymer dispersions into the extruder device.

19. The method for the production of batteries of the secondary lithium battery type that comprises a method for the production of battery electrodes according to any of the claims 1 to 18.

20. The method according to claim 19 that further comprises the production of battery separators according to a method defined in any of the claims 1 to 18.

21. A battery electrode obtainable according to a method that is in accordance with any of the claims 1 to 18.

22. The batteries of the secondary lithium battery type obtainable according to claim 19 or 20.